

ECE 440L

Fall 2013

Last updated: 09/04/13

## Lab 1 expectations

### Overview

- 100 points possible
- Grade basis: Completeness, clarity, and correctness
- Partial credit given

| Problem  | Item   |
|----------|--|
| 1 (a)    | Measurements of harmonics are recorded.                                      |
|          | THD calculation is shown, uses correct formula.                              |
|          |  |
| 2 (a)    | Measurements of spectrum, RMS of square wave are recorded.                   |
|          | Measurements of spectrum, RMS of triangle wave are recorded.                 |
|          | Results are compared with theory.  |
| (b)      | Supporting calculations are shown.   |
|          |  |
| 3 (a)    | Graph of PSD is shown.   |
| (b)      | Unfiltered noise: BW is recorded.  |
|          | Unfiltered noise: RMS is calculated from PSD using correct procedure.        |
|          | Unfiltered noise: RMS calculated from PSD is near RMS measured on Fluke.     |
| (c), (d) | LPF noise: RMS is calculated from PSD using correct procedure.               |
|          | LPF noise: RMS calculated from PSD is near RMS measured on Fluke.            |
|          | LPF noise with 2x BW: RMS is calculated from PSD using correct procedure.    |
|          | LPF noise with 2x BW: RMS calculated from PSD is near RMS measured on Fluke. |
|          | Student discusses the effect of doubling BW on RMS (mathematically).         |
| (e)      | BPF noise: PSD is recorded.  |
|          | BPF noise: RMS is recorded.  |
|          | Results are compared to pre-lab.   |
|          |  |
| 4 (a)    | Signal RMS voltages are measured correctly.                                  |
|          | Noise RMS is calculated from PSD using correct procedure.                    |
|          | SNR calculation is shown, uses correct formula.                              |
| (b)      | Observations about the effects of RBW and VBW are recorded.                  |